Agency Sustainability Plan

Massachusetts Department of Conservation and Recreation

Katherine F. Abbott, Commissioner

Prepared by the
DCR Sustainability Team

Submitted to the
State Sustainability
Coordinating Council

September 2004

Dear DCR Staff and Partners,

I am pleased to submit the first Sustainability Plan for DCR. The Plan was prepared by a team of DCR staff members representing all divisions of the agency in an effort to enable DCR to work toward a more environmentally sound and sustainable future. With your help, these same staff will now work to implement the Plan.

It is becoming increasingly clear that our society faces serious environmental issues. From concerns over climate change, to water shortages to air quality, environmental issues affect the quality of life in our communities here in Massachusetts and around the world.

This Plan sets long-range goals and outlines best management practices that will, over the long-term improve our environmental performance while in many cases reducing operating costs. Additionally, the Plan proposes specific environmentally sustainable actions and strategies in a wide number of key areas that will enable us to take more concrete and achievable steps toward our goals. These sustainable practices can also frequently make economic sense by cutting our fuel and electricity costs, lowering our waste disposal fees, and reducing water and sewer bills.

As an agency, we are charged with protecting and enhancing the natural resources and recreational opportunities in the Commonwealth. In the past this meant that doing our jobs was enough to protect the environment on which we all depend. Now, we are acknowledging that ***how*** we do our job is also a critical component of our mission. By changing the way in which we manage our own operations, we hope to also transform our partners' ways of doing business. Educating ourselves and our partners, as well as residents and visitors, about how we move towards sustainability, will be a key part of what we do.

After you read this document, consider what you can do to improve the way you do your job. Start small. Be practical. Ask for help when needed. Consider the whole story. And do not forget to share your successes with your co-workers. If it's worthy of praise, then it's worthy of replication. Together our efforts will add up to a more livable and healthier state in which everyone can thrive.

Sincerely,

Katherine F. Abbott
Commissioner

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1.0 DCR Overview: Impact Identification and Sustainability Team

This document, the first-ever Sustainability Plan for the Department of Conservation and Recreation, is arranged according to the guidelines specified in the Agency Sustainability Planning and Implementation Guide for the Massachusetts State Sustainability Program. The State Sustainability Program was established in July 2002 by Executive Order No. 438, which calls on all state agencies to "work diligently and expeditiously to develop and implement policies and procedures to promote environmentally sustainable practices."

In order to teach our visitors and partners about sustainability, we need to have a firm working understanding of it. For this reason, this plan outlines our operational strategy. This strategy is broken into five sections that detail specific agency information, long term goals, short term actions, management systems and tracking progress.

1.1 DCR Purpose and Scope

DCR is the steward of nearly 450,000 acres (8.7% of Massachusetts land mass) of state owned parks, forests, reservoirs, beaches, mountains, ponds, riverbanks, parkways, trails and historic sites. DCR also protects and contributes to the management of resources on privately and municipally held land through technical assistance, grant programs, planning programs, policy development and other resource protection services. DCR exists to protect, promote and enhance our commonwealth of natural, cultural and recreational resources for the well being of all.

Who We Are

People
- 35 million visitors per year
- 140 non-profit partners
- 78 private concessions
- 1,100 full time employees
- 1,700 seasonal employees

Land Assets
- 449,000 acres
- 16 harbor islands
- 67 beaches
- 105 miles of coastline
- 21 Historic sites

Water Assets
- 229,000 acre watershed providing 2.2 million residents of Massachusetts with safe drinking water
- 55 public water supply wells
- 300 lakes and ponds

Recreational Assets
- Over 2,000 miles of trails
- 3,525 campsites
- 3 downhill ski areas
- 2 golf courses
- 55 ball fields
- 60 playgrounds
- 39 pools
- 39 rinks
- 1,800 buildings

Infrastructure Assets
- 270 bridges
- 263 dams/locks
- 15 seawalls
- 6 commercial piers
- 160 boat ramps
- 2,000 parking Lots
- 12,800 street lights
- 3,500 miles of paved & unpaved roads

1.2 Agency Sustainability Team Members

The pursuit of sustainability is necessarily a multi-disciplinary and multi-functional effort, so DCR has assembled a diverse team from throughout the agency to provide input and insights. The individuals contributing to this plan represent a wide variety of divisions and units, and accordingly have provided an important balance between visionary goals and grounded knowledge of what is realistic for the agency.

DCR Sustainability Team

Samantha Overton Bussell, Agency Sustainability Coordinator*

Jim Baecker, Planning*	Andrea Lukens, Natural Resource Protection*
Ken Collette, Legal Services	Scott Murphy, Urban Parks*
Rick Corsi, Planning	Dave O'Neill, State Parks*
Jim DiMaio, Forestry*	Les Perry, State Parks
Ken Foley, State Parks	Robin Pfestch, Engineering*
Darryl Forgione, Engineering	Mike Rock, Urban Parks
Christine Gault, WBNERR*	Brian Shanahan, State Parks
Mike Gildesgame, Water Resources*	Raul Silva, Engineering
Marty Glavin, Urban Parks	Ruth Teixeria, Engineering*
Todd LaFleur, State Parks*	Joel Zimmerman, Water Supply Protection

* Core Team Members

The Sustainability Team will meet every two months to expeditiously develop and implement environmentally sustainable practices within all DCR divisions and bureaus. The Core Team Members will chair ad hoc working groups to implement short-term action steps described in Section 3.2 of this Plan.

1.3 DCR's Impacts on the Environment and Human Health

In order to identify the major environmental impacts of our operations, the DCR Sustainability Team first outlined the major operations that occur in the department, the key activities associated with these operations, and then identified the environmental and health impacts of these activities.

A summary of this exercise is detailed in the chart below, which is intended to demonstrate the overall breadth of DCR's operations and impacts. This chart is then followed by specific sections where DCR has determined its impact is the greatest with details on the agency's specific activities and their related impacts.

Summary of Operations, Activities & Impacts

DCR Major Operations…

- Beaches
- Biodiversity Management
- Building Management (visitor's centers)
- Campgrounds
- Construction & Management of Parkways/bridges
- Construction & Renovation of Buildings
- Dam and Reservoir Management
- Education/Interpretation
- Endangered Species Management
- Equipment & Vehicle Maintenance
- Fiscal & Contract Management
- Fleet Management (boats/auto)
- Flood Control
- Forest Management
- Forest-Insects/Invasives Control
- Golf Courses
- Habitat Maintenance
- Historic Building and Archaeological Site Preservation
- Human Resources
- Ice skating rinks
- Land Acquisition/Easements
- Landscaping & Grounds Management
- Natural Resource and Facility Planning
- Office Operations
- Park and Recreational Facility Management
- Pools
- Rangers/Security
- Regulatory Enforcement
- Research
- Ski Areas
- Special Events
- Storm Water Management
- Trails & ORV Trail management
- Watershed Management

Associated Activities…

- Building lighting, heating and cooling (electricity, fuels)
- Catch basin cleaning
- Chemical treatment in pools
- Disposal of hazardous waste (waste oil, batteries, lead paint, asbestos, etc.)
- Disposal of waste from offices, parks, & illegal dumping
- Filling pools and rinks
- Fire Detection and Suppression
- Hiring and training staff
- Landscape and golf course irrigation
- Maintaining and cleaning vehicles
- Managing leases, concession contracts
- Mowing, trimming, pruning, fertilizing
- Operating Public restrooms and bathhouses
- Operating vehicles and generators (gasoline, diesel, other alternate fuels)
- Paving and patching roads & paths
- Purchasing of office supplies, office and IT equipment, building materials, cleaning services, food services
- Recycling
- Revenue Collections
- Salting and sanding roads
- Sanitation and cleaning of equipment
- Silviculture
- Snow-making for ski areas
- Street-sweeping and disposal
- Wastewater management
- Wood burning

Potential Environmental and Health Impacts…

- Acid rain (impacts on forests, soil, water, buildings)
- Airborne mercury
- Air emissions from life cycles of products and services
- Asbestos and lead based paint exposure
- Climate change
- Common air pollution from solid waste incineration
- Erosion
- Habitats and stream flow
- Impacts on surface and ground water supply (quantity and quality)
- Indoor air quality from materials used in buildings
- Invasive species introduction
- Loss of biodiversity
- Loss of open space for landfills
- Marine, estuarine and riparian biodiversity
- Loss of irreplaceable historic and archaeological resources
- Lost employee productivity and work-days
- Nitrogen oxides (NOx) air pollution (health and visibility)
- Nutrient loading (eutrophication)
- Particulate air pollution (health impacts)
- Public access to public lands (camping, hiking)
- Quality of marine resource
- Resource consumption and depletion
- Respiratory and cardiovascular illness and event triggers
- Soil and water contamination
- Toxic air pollution from disposal and incineration noise
- Waste disposal (landfill impacts on air, land and water) and incineration (air emissions & ash disposal impacts)
- Water emissions from life cycles of products and services

In order to better understand how the agency's operational activities effect the environment and human health, we grouped our activities into the highest priority environmental impact areas: (1) Natural Resources and Watershed Management; (2) Water Use; (3) Energy Use; (4) Procurement of Products and Services; (5) Solid Waste; and (6) Hazardous Material Use. Each of these six impact areas is expanded upon below with an overview of the agency activities with the most significant impacts, the cost implications of these activities, and examples of activities currently underway within the agency to reduce these impacts. Sections 2 and 3 of this Plan will outline some of DCR's key goals and strategies designed to address these impacts.

Natural Resource and Watershed Management

DCR is a unique agency, managing 449,000 acres of land (over 8% of the state) including the Quabbin and Wachusett Reservoirs, which provide 250 million gallons a day of water to communities served by the Massachusetts Water Resources Authority (MWRA). Combined, the state and urban parks divisions have oversight over 280 state parks and reservations, more than 3,000 campsites, bike paths, esplanades, dozens of beaches, skating rinks, swimming pools, playgrounds, ball fields and recreational facilities, historic buildings, archaeological sites, and an extensive system of scenic roadways that provide access to and through these properties.

A key part of our mission is to manage, protect, restore and enhance ecosystems and biodiversity, maintain resource values, preserve views and aesthetic resources, prevent erosion and soil degradation, and safeguard historic and cultural resources. There are many impacts associated with human use of the land and water that we protect and manage. The agency seeks to manage our land using sound scientific practices and to balance protection of the natural and cultural resources in our facilities with providing high quality recreational uses.

The chart below identifies some of the key DCR operations and activities that potentially impact natural and water resources:

Agency Operations	Activities	Environmental and Human Health Impacts
Watershed Management	• Forestry/silviculture • Endangered species management • Water quality testing	• Carbon sequestration • Habitats and stream flow • Erosion on water quality • Impacts on water supply (quantity and quality) • Public access to public lands (camping, hiking) • Quality of marine resources • Marine, estuarine and riparian biodiversity
Managing Lakes, Ponds and Dams	• Swimming, boating, fishing, skating and scenic viewing	• Introduction of invasive, non-native species • Impaired water quality • Deterioration of dams to protect upstream, in-lake and downstream recreational and resource values
Managing Parks and Reservations	• Trail and road management • Camping and swimming area management • Grounds maintenance • Habitat protection • Historic building maintenance • Fire and insect pest control • Salt and sand for roads • Pavement repair and replacement	• Loss of biodiversity • Damage to natural resource due to inappropriate recreational use or overuse • Air and noise pollution • Historic-cultural resource damage or loss • Habitat alteration • Invasive species • Impacts to wildlife and waterways • Stormwater overflow • Nutrient loading (eutrophication)

Current initiatives:

- Obtained Green Certification for DCR Forestry practices on _____ acres of DCR-owned forests.
- Turning brownfields into parks:
  - Used Big Dig excavation material to cap an old landfill to create Spectacle Island Park
  - Former Neponset Drive-In and Hallet Street Landfill redeveloped to create Pope John Paul II Park
  - Converted former rail lines into bike trails
  - Transformed industrial urban river edge into an extension of the Charles River Parks
  - Extension of the Lawrence Riverfront Park on a brownfield site.
- Use of native and drought resistant species in new parks
- Repaired historic buildings and stabilized archaeological sites

Water Use

DCR is a significant consumer of water for grounds maintenance, landscape irrigation, swimming pools, skating rinks, campgrounds, and other activities, spending $928,457 on sewer and water costs in fiscal year 2003. Known water withdrawals by the Urban Park System total over 58 millions gallons per year, although this total does not include State Park and central office operations, for which data is not available at this time. In some cases water withdrawals from lakes, rivers and streams can impact habitats that support biodiversity. In addition, the parks and facilities generate both wastewater and storm water, which, depending on the source, volume and direction of flow, can impact habitats and result in nutrient loading.

The chart below highlights some of the key DCR operations and activities and associated environmental impacts related to the use and management of water.

Agency Operations	ACTIVITIES
Operating Recreational Facilities	• Filling pools and rinks • Snowmaking • Irrigating golf courses, lawns and playfields
Operating Public Restrooms & Bathhouses	• Public use of toilets, urinals, sinks & showers • Cleaning bathrooms • Wastewater from bathrooms
Office Management	• Bathroom Use
Road De-Icing	• Salting and sanding
Environmental and Health Impacts	
WATER USE • Impacts on supply (quantity and quality) • Negative impacts on habitats, stream flow and biodiversity from over-withdrawal	**WASTEWATER and STORMWATER** • Nutrient loading (eutrophication) • Erosion • Water quality

Current initiatives:

- Park and parkway maintenance practice is to conserve water by only watering ornamental elements such as some of the large flower beds at rotaries. Current design standards call for drought tolerant species as much as possible.
- 1995 Water Conservation Project installed 764 water saver flush valves, 265 0.5 GPM aerators on bathroom faucets and 267 low flow shower heads.

- More than 50 composting toilets have been installed throughout the DCR park system
- Installation of coin-operated showers at three state parks to reduce water use.

Energy Use

As an agency with over 1,800 buildings which require fuel for heating and cooling, electricity for lighting and operating equipment, and a significant vehicle fleet, DCR is a major energy consumer. In FY'03 the agency spent $444,306 on 215,107 gallons of fuel oil for buildings, $5,592,774 on electricity, $689,591 on natural gas, and $568,938 for 320,622 gallons of gasoline and 217,744 gallons of diesel fuels for the fleet. Our current forms of energy use result in a wide range of air emissions, including, greenhouse gases, sulfur and nitrogen oxides, and airborne mercury, which may have direct negative impacts on human health and the environment. Sulfur and nitrogen oxides are major sources of respiratory health problems, especially in the still-developing young and vulnerable elderly, while mercury persists and accumulates in the food chain.

Climate change is increasingly becoming a major issue in Massachusetts, and the agency is one of the top 20 state agencies contributing to greenhouse gas emissions according to the Massachusetts State Agency Greenhouse Gas Emissions Inventory for fiscal year 2002, with 25,179 tons of CO2 emissions for the year. To put this into perspective, these emissions are the equivalent to the emissions of 4,944 average-sized vehicles driving over the course of a year. Itwould take 19,035 acres of pine forests a year to sequester, or absorb the 25,000 tons of CO2 emissions through the process of photosynthesis.

The chart below highlights some of the key DCR operations and activities and associated environmental impacts related to electricity and fuel use.

Agency Operations	Activities
Managing Buildings	• Lighting • Heating and cooling • Plug load (computers, printers, copiers, power tools and appliances)
Operating Vehicles & Boats	• Burning gasoline, diesel and other fuels
Environmental and Human Health Impacts	
• Climate impacts from greenhouse gas emissions • Airborne mercury emissions from some electricity generation - • Acid rain from electricity production which impacts forests, soil, water bodies and building exteriors • Nitrogen oxides (NOx) air pollution – health impacts, asthma, respiratory illness, visibility • Particulates - health impacts, asthma, respiratory illness	

Current Initiatives:
- Lighting retrofits at three state park facilities (Carver, Carlisle and Pittsfield) with utility rebates.
- Increased insulation, day lighting and installation of enegy efficient heating systems in new or renovated building projects.
- Electric and propane Zambonis installed at the 20 skating rinks in the urban area, significantly reducing indoor air and carbon emissions

- Recent rink renovations (Waltham, Milton, Lynn, Everett, Flynn and Steriti) included installation of energy efficient systemsincluding, high efficiency motors, state of the art efficiency controls, computer controlled chiller packages and desiccant dehumidifiers significantly reducing operating costs.
- 17% of light duty vehicle fleet are alternative fuel vehicles, reducing air pollution and use of gasoline.
- Introduction of mountain bikes for rangers.

Procurement of Products and Services

The procurement of goods and services, including the design and construction of buildings, is an integral part of almost all of DCRs operations. The type of materials and equipment our agency uses, such as paper, heavy equipment and IT equipment, cleaning supplies and building materials can have significant environmental impacts on natural resource consumption, waste generation, air emissions, indoor air quality and water use. Use of Environmentally Preferable Products (EPPs), products that contain recycled materials, as well as those that reduce energy consumption, minimize the release of toxic materials, consume less water and/or otherwise minimize environmental impacts in their creation and use can greatly reduce DCR's environmental impact.

DCR activities also result in the less obvious hazardous material use that lies "upstream" in the life cycle – in the embodied impacts of materials extraction and processing. For example, the production of white paper products generates persistent toxics in the bleaching process. Similarly, the extraction and processing of metals and other resources used for many products purchased by DCR and building construction is highly energy-intensive, leading to a variety of impacts associated with non-renewable energy sources.

The chart below highlights some of the key DCR operations and activities and associated environmental impacts related to the products and services purchased by DCR, and is not intended to be comprehensive:

Agency Operations	Activities
Office Operations - Procurement	• Paper, office supplies • Office equipment including computers, printers & copiers
Facility Management - Procurement	• Power tools and heavy equipment • Vehicles, vehicle fuels • Cleaning and maintenance supplies
Service Contracts	• Cleaning contracts - cleaning and bathroom supplies • Rink and food concessions
Building Design and Construction	• Construction specifications • Construction debris removal
Environmental and Health Impacts	
• Indoor air quality from materials used in buildings • Water emissions from life cycles of products and services • Air emissions from life cycles of products and services • Waste disposal impacts – landfill and incineration • Resource consumption and depletion • Energy and water consumption during product manufacture	

Current Initiatives:

- Purchase and use of Office Supplies made from recycled material including, but not limited to paper, file folders, post-its, toner cartridges, etc.
- Purchase and use of re-refined motor oil for vehicle maintenance

- Purchase and use of bio-based lubricants for golf course equipment
- Use bio-solids as fertilizer on the South West Corridor Park
- Adhere to Integrated Pest Management Practices at all facilities.
- Use of recycled plastic lumber for benches, picnic tables, and boardwalks for the South Boston, Constitution Beach and Dorchester Shores restoration projects and for twenty-three fish ladder baffles for the Charles River.

Solid Waste

In Fiscal Year 2003, the agency spent $533,937 on non-hazardous waste disposal generated by both the public and the agency at state parks, urban recreational facilities and within DCR operations. In addition, in FY'03 DCR recycled over 26 tons of material including paper, batteries, metals and compost.

Disposal of solid waste, whether in a landfill or through incineration, has significant environmental impacts including loss of open space, leaching into groundwater, and air emissions. There are also fuel costs and impacts associated with transportation for waste disposal, leading to climate change and health concerns.

The chart below highlights some of the key DCR operations, activities and associated environmental impacts related to solid waste disposal:

Agency Operations	Activities
DCR Office Operations	• Disposal of paper, electronics, other office wastes
Parks and recreation facility management	• Disposal of publicly generated waste • Disposal of landscape waste – clippings, seaweed, etc.
Roadway Management	• Disposal of illegally dumped appliances, furniture and other trash • Disposal of road sweepings
Construction & Renovation of Buildings	• Specifying waste disposal and recycling into construction contracts • Disposal of ABCD construction waste
Environmental and Human Health Impacts	
Incineration • Emissions of criteria pollutants • Heavy metals in ash • Mercury emissions and deposition • Transportation emissions	Landfilling • Loss of open space • Transportation emissions • Leachate into water supplies

Current Initiatives:

- In Fiscal Year 2003, 1,050 tons of street sweepings were used to stabilize a steep slope.
- 40,000 tons of recycled asphalt used in road base course in two year resurfacing contract.
- Recycled paper products are purchased and paper waste is recycled at most agency facilities.

Unique Challenge:

Although, DCR has made concerted efforts to recycle materials that the agency generates through its operation activities, however, over 90% of the total solid waste generated is by the public at our facilities. Establishing comprehensive recycling efforts at these facilities pose unique challenges given the large number of daily visitors and the transient nature of those visits.

Hazardous Material Use

Due to the nature of park and facility operations, the agency generates a fair amount of hazardous waste such as computers, waste oil, paints and solvents during the course of doing business. In addition, due to the age of many of its buildings and structures, the agency generates asbestos and lead based paint waste during repair and renovation activities. DCR spent $290,855 on hazardous waste removal services in FY03.

Hazardous and toxic materials can have direct negative impacts on people that use them as well as the people and environment surrounding the users. Dealing properly and safely with the hazardous materials, including outdated and expired products, places a significant burden on the agency during repair and renovation activities. The costs include: training, licensing, safety equipment, storage equipment and proper disposal.

The chart below highlights some of the key DCR operations and activities and associated environmental impacts related to hazardous material use and disposal:

Agency Operations	Activities
Maintenance of facilities and vehicles	• Vehicle washing and maintenance • Waste paint, oil and antifreeze disposal • Disposal of car batteries and tires • Disposal of herbicides and pesticides
Environmental Health & Safety	• Asbestos and lead paint removal and disposal • Disposal of illegal dumped hazardous materials
Office Management	• Disposal of fluorescent light bulbs, batteries and computer equipment
Environmental and Human Health Impacts	
• Lost employee productivity and work days • Soil and water contamination • Indoor air quality	

Current Initiatives:

- PCB Transformer Removal Project at all DCR facilities.
- Annual Health & Safety Environmental Compliance, Hazardous Waste Operations Emergency Response and Waste Oil Management Training.
- Annual inspections of State Park facilities by regional safety committees.

Unique Challenge:

A significant amount of illegal dumping occurs particularly at DCR's urban facilities. During Fiscal Year 2003 DCR's illegal dumping log 2003 shows a variety of materials that include: vehicles in rivers, 25 cubic yards of construction and demolition debris deposited near a bike trail, twenty-five one gallon paint containers in the watershed lands, 12 large bags of friable asbestos at Quincy Quarry and hundreds of abandoned propane tanks (20 lb. grill type), air conditioners, white goods and other difficult to manage materials.

1.4 Agency Operational Costs

While dollar costs of our operational environmental impacts are often unaccounted for, some of them are regularly tracked. The table below shows specific expenses for the department related to each environmental impact area. In some cases cost information was unavailable so volume units were used to represent department use. It is essential to gather this data regularly in order to track and measure reductions in our use over time and to provide information on cost savings to when considering priorities or resource allocation.

Fiscal Year 2003 Operational Costs:

Item		Volume	$ Expenditures
Water and Sewer		N/A	**$ 928,457**
Electricity		N/A	**$ 5,592,774**
Natural Gas		N/A	**$ 689,591**
Fuel Oil – Buildings		215,107 gal	**$ 423,072**
Fuel – Vehicles	Gasoline Diesel	320,622 gal 217,744 gal	**$ 568,938**
Compressed Natural Gas		3,008 gal	N/A
Solid Waste Disposal and Recycling		N/A	**$ 533,937***
Hazardous Waste Disposal		N/A	**$ 290,855***
		TOTALS	**$ 9,027,624**

* Totals from MMARS Expenditure Report – Hazardous Waste Object Codes J21 & N14, Non-Hazardous Waste Removal Object Code J39

2.0 Long-term Goals for the Longer Journey: Setting Our Compass for a Generation from Now

The act of determining long-term goals helps us consciously choose what we want to be in the future. While these goals may not be specific to a particular activity, division or position, they provide a guide for setting the short-term goals that get us started, as well as a way to ensure that we look up from our all-consuming regular daily responsibilities. This section describes the seven long-term goals DCR has established that seek to minimize the environmental impacts of its park and facilities operations and management. Best Management Practices are listed in this section to identify a wide range of potential activities that could make up an action plan to achieve the long-term goals established by this plan.

2.1 Natural Resource and Watershed Management Goal

Manage DCR lands using sound scientific practices to balance protection of natural and cultural resources in our facilities with the provision of high quality recreational uses. Prepare and implement Resource Management Plans for major DCR parks and reservations to protect and enhance the Commonwealth's natural and water resources by 2008.

The primary mission of DCR is to protect, preserve and enhance the natural, cultural and water resources of the Commonwealth in order to promote healthy, livable and sustainable communities, and to connect people to these resources through recreation and education.

Natural Resource and Watershed Management Best Practices

- Use porous pavement materials to reduce storm water runoff
- Use hardened trails where intensive visitor use threatens degradation of site (boardwalks, etc)
- Manage storm water onsite and with natural systems such as planted swales
- Reduce turf to active use areas only
- Leave grass clippings on turf to compost or remove and compost as a future soil amendment.
- Manage invasive and nuisance plants using grazing animals, volunteer crews and non-persistent herbicides
- Encourage indigenous wildlife through native plantings and separation of wild and intensive recreation areas
- Plant native and drought tolerant species of shrubs, trees, plants to maintain local biodiversity and to reduce irrigation needs while avoiding the use of non-naïve species whenever possible
- Maintain native grasses, shrubs and tree buffers around waterways and wetlands for erosion control and water cooling
- Restore channelized waterways to sloped banks and plant with native plants
- Use natural rock rip rap or soil bioengineering wherever possible on slopes
- Maintain green certification of forested land
- Update resource management plans every 7 years
- Identify and inventory high priority natural and water resources (threatened eco-systems)
- Reduce use of pesticides, herbicides or chemical fertilizers (use LISA equivalent)
- Incorporate green practices at golf courses to reduce water, pesticide and fertilizer use

2.2 Water Conservation Goal

Reduce water use at DCR facilities by at least 15% by 2010, based on 2003 baseline levels, by achieving more efficient water use, including improving employee behavioral practices, replacing inefficient fixtures, repairing leaks, reducing water used in landscaping, rainwater collection and investigating grey water reuse opportunities.

Water Conservation Best Practices

- High efficiency appliances
- Evapotranspiration / weather controlled irrigation
- Water plants and lawns with less frequency to encourage root depth
- Allow turf browning in low use areas during drought periods
- Install waterless urinals wherever feasible
- Install low flow toilets
- Use composting or gray water toilets wherever feasible
- Low flow and metered faucets/showers
- Drought tolerant, well adapted and native plants
- Irrigate from wells or grey water systems to reduce energy and chemical use
- Meter systems to identify baseline consumption rates and leaks
- Set periodic reduction goals and track savings in dollars, volume and habitat impacts

2.3 Energy Use Reduction Goal

Reduce greenhouse gas emissions from DCR operations by 40%, based on 2003 baseline levels, by 2024 through energy efficiency, conservation, use of alternative fuels and renewable energy, and changes in employee practices.

DCR's climate change impact can be mitigated through reduced energy consumption for buildings and transportation. We envision energy efficient facilities which use renewable power sources such as solar, and wind at the islands and in remote park locations. Our goal is to increase the percentage of electricity from renewable sources to 25% by 2012 and 40% by 2024. Electric or non-motorized vehicles will be in use for in - park visitor management, and alternative fuel vehicles will be used as much as possible for parkway and other management operations. Staff will be encouraged to use public transportation, car pooling and telecommuting as practical.

Energy Efficiency Best Practices

- Use renewable energy sources such as geothermal, hydro, solar, wood biomass or wind power
- Generate energy on-site where feasible with support of USDA, USDOE and energy providers
- Seek MRET funding for non-dam hydro, wind, geothermal and photovoltaic power.
- Promote telecommuting as appropriate
- Support public transit use to offices and parks.
- Support bicycle commuting with covered and secure racks
- Use low emission vehicles, renewable fuels and hybrids
- Use bicycles and bike trailers for in park activities
- Conference calls and electronic meetings to reduce inter-office travel
- Base fees on vehicles not visitors
- Energy audits and retrofits for high energy consumption buildings
- Commission and maintain all building HVAC systems to ensure employee productivity and energy efficiency
- Increased insulation (roof, wall, floor)
- Double paned, insulated windows
- Programmable thermostats
- Natural airflow to encourage passive cooling:
- Efficient lighting and appliances
- On-demand hot water and occupancy sensors
- Day lighting and solar hot water

2.4 Solid Waste Reduction/Recycling Goal

DCR will strive to achieve a 90% reduction in solid waste generated by DCR and the public at our parks and facilities by 2024.

Our vision is to have minimal waste generated by DCR and the public at our parks, reservations and facilities. A carry in - carry out policy will be instituted in remote parks and park visitors will be encouraged to recycle.

Solid Waste Reduction/Recycling Best Practices

- Install large industrial composters for food waste
- Remove trash barrels at parks where possible and provide convenient recycling at campgrounds, day use areas and offices
- Use visually consistent containers for recycling wherever waste receptacles are located
- For remote areas-post signs to “pack it out” if there is no way to haul waste and recycling away
- Use surplus furniture
- Use flooring and carpet tiles to reduce waste of unworn areas
- Recycle fluorescent light bulbs
- Reduce paper use:
    - Send documents electronically
    - Archive electronically
    - Set all printers and copiers to default to double sided printing
    - Use non-confidential scrap paper for draft review
    - Re-use large envelopes with address labels

2.5 Sustainable Design Goal

Prepare and adopt sustainable site and building design standards for all DCR new construction and renovation projects by 2006.

Building and site construction, operation and maintenance have a significant impact on the environment. Sustainable design is an integrated approach that focuses on: (1) site location and impacts; (2) water consumption; (3) energy use and air emissions; (4) waste and materials, and (5) indoor environmental quality. DCR will also utilize its green buildings and landscapes as an educational tool for the public.

Sustainable Design Best Practices

- Design buildings to meet LEED Silver standards or better.
- Have maintenance and operations staff review all designs and specs to ensure low life cycle costs
- Specify reuse and /or deconstruction to extend the life of the building or high value material
- Use sustainably harvested wood from DCR lands when available
- Adopt sustainable design standards for landscape improvements
- Specify materials that meet EPP criteria
- Have key staff attend LEED training
- Require construction contractors to develop waste management plans
- Publicize sustainable design and energy efficiency features to staff and visitors

2.6 Procurement and Specifications Goal

Increase purchase of Environmental Preferable Products (EPP) by 50% by 2014. Use economic buying power to leverage sustainable practices by DCR partners.

DCR can use its economic buying power to promote a more sustainable marketplace by providing large reliable demand for better made, more environmentally sound products. In addition, by setting new product purchasing specs, we will put in place strategies to leverage sustainable practices by our vendors, contractors, concessionaires, lessees and permittees.

Procurement and Specifications Best Practices

- Purchase EPP products that cost less, including, but not limited to remanufactured toner cartridges, recycled mulch and recycled antifreeze.
- Purchase energy efficient office equipment, appliances and light bulbs.
- Purchase less or non-toxic products including bio-based lubricants and pool ionization systems.
- Purchase less toxic cleaners, carpeting and paints with low volatile organic compounds to improve indoor air quality
- Use statewide contracts whenever possible to identify and purchase EPPs
- Require use of EPPs in lease and concession agreements.

2.7 Hazardous Material Use Goal

Reduce the amount of hazardous waste that is generated for disposal by identifying environmentally preferable alternatives and recycling materials as much as possible. Ensure that all facilities have in place appropriate and comprehensive management systems to guarantee compliance and prevent releases by 2007.

DCR operations can reduce the amount of hazardous waste that is generated for disposal into the waste stream by both recycling material and using non-toxic chemicals as much as possible. Through training and institution of formal management systems, DCR intends to maintain compliance and prevent hazardous releases into the environment.

Hazardous Material Use Best Practices

- Purchase flat screen monitors to reduce bulk and toxicity of CRT disposal
- Proper disposal/recycling of electronics
- Purchase no toxic release inventory chemicals
- Eliminate use of disposable aerosol cans
- Clean spray equipment in areas that do not drain to waterways
- Mow strips under fence lines and fixed site furniture to reduce herbicide use
- Use ACQ or recycled plastic timber as alternatives to existing pressure treated materials
- Remove and replace all mercury switches in vehicles
- Recycle batteries with local suppliers (automotive, radio, other types of batteries)
- Establish formal hazardous waste management practices at facilities
- Attend periodic trainings to learn about new regulatory requirements

3.0 Setting Our Near Term Priorities

3.1 Short Term Action Steps

This section identifies a list of short term action steps that DCR can take now to move toward its long term vision of a world class sustainable park and resource management agency, thereby reducing environmental impacts and lowering operational costs. The Agency Short Term Action Steps were developed by the DCR Sustainability Team. Our intention is to focus on energy issues which have the greatest return on investment, and resource and material use issues which are more easily accomplished or generate easily measurable results.

Natural Resource and Watershed Management Goal

- Maintain green certification for DCR forests
- Initiate Resource Management Plans that provide an appropriate balance between natural resource protection and recreational opportunities
- Increase number of natural landscaped areas

Water Conservation Goal

- Eliminate unnecessary water use in DCR pools by identifying and correcting major water loss from our recreational pools.
- Assure that all building construction includes water conserving showers, toilets, sinks and other plumbing.
- Assure that all site contracts include water conserving lawn and landscape techniques and technologies, as per the Water Resources Commission guidance and policy.

Energy Use Reduction Goal

- Reduce facility energy consumption through facility energy conservation improvements with quick paybacks.
- Include energy efficient improvements in new skating rink lease agreements.
- Shift some of DCR energy use to renewable sources (bio-mass, solar, hydro, wind and geothermal) starting with three pilot projects.
- Identify key behavioral Practices that will reduce energy use.

Solid Waste Reduction/ Recycling Goal

- Implement a system -wide program to reduce solid waste generation and increase recycling by staff (offices and maintenance facilities), and park visitors (bottles and cans).
- Ensure Utilization of most recent BMPs for Construction

Sustainable Design Goal

- Integrate Sustainable Practices into Planning and Engineering Projects

Procurement and Specifications Goal

- Increase % of EPPs

Hazardous Material Use Goal

- Identify potential swimming pools for chlorine free water treatment systems (ionization, sand filter or ozone)
- Institute environmental management systems to maintain compliance and reduce the amount of hazardous waste entering the waste stream through recycling.
- Identify less toxic alternatives and use wherever feasible

3.2 Sustainability Team Work Plan

The following Work Plan assigns responsibilities and due dates for implementation of the Short Term Action Steps. It is intended that the DCR Sustainability Team will review the short-term action steps on an annual basis for updates, revisions and changes as we more toward achieving our long-term sustainability goals.

Natural Resource and Watershed Management Goal	Benefits	Specific Tasks	Timeline	Responsible Staff
Maintain green certification for DCR forests	• Sustained yields • Forest and watershed health • Public trust	Transportation Inventory/condition survey and address road erosion problems	Dec., 2005	Chair: Jim DiMaio, Forestry Peter Church- Water Supply Protection
		Calculate allowable sale quantity	Dec., 2007	
		Identify and designate reserve system and high conservation value forest conditions	Dec., 2007	
		Complete Eco-regional Plans	Dec., 2007	
		Boundary location, marking and maintenance	Dec. 2009	
		Complete strategic natural resource site management plans	Dec., 2009	
Prepare Resource Management Plans for priority facilities that provide an appropriate balance between natural resource protection and recreational opportunities	• Preserve and enhance DCR owned natural resources • Protect water supply • Enhance and protect wetlands, riverfront areas and endangered species habitat	Prepare outline for Resource Management Plans with a sustainability component.	Sept., 2004	Chair: Andrea Lukens, Resource Protection
		Use Facility Baseline Assessment to Identify list of priority facilities for initial Resource Management Plans.	Nov., 2004	
		Complete Resource Management Plans for priority facilities.	June 2008	
Increase number of natural landscaped areas	Reduces landscape water use, fuel and machinery use, reduces greenhouse gas emissions, frees labor for other uses; provides a more natural setting for DCR visitors and offers interpretive opportunities	Identify and prioritize locations for natural landscape management and facility functions compatible with non-managed landscapes	Oct., 2004	Chair: Christine Gault, WBNERR Mike Gildesgame- Water Resources Rick Corsi- Planning Matt Thurlow- Engineering
		Develop pilot program for 8-10 locations around state	Apr., 2005	
		Develop fertilizer policy including use of slow release, organic fertilizer and/or MWRA biosolids	May, 2005	

Energy Use Reduction Goal	Benefits	Specific Tasks	Timeline	Responsible Staff
Reduce facility energy consumption each year through facility energy conservation improvements with quick paybacks.	• Reduce agency energy costs • Reduce greenhouse gas emissions • Decrease reliance on foreign fuels • Create domestic jobs • Reduce air pollutants leading to acid rain and ground-level smog	Review past facility energy conservation audits and agency energy expenditures.	Oct., 2004	Chair: Jim Baecker, Planning Jim DiMaio- Forestry Robin Pfetch- Engineering
		Schedule lighting audits at facilities with high lighting consumption	Jan., 2005	
		Complete lighting retrofits through utility rebate programs	June 2007	
		Schedule energy audits which provide "building diagnoses" and specific in-depth recommendations for energy conservation.	Jan., 2005	
		Develop energy conservation improvement implementation schedule by priority.	June, 2006	
		Investigate traffic and street lighting efficiency opportunities and develop budget and procurement plan for retrofits, wherever possible	June, 2005	
Shift some of DCR energy use to renewable sources (bio-mass, solar, hydro, wind and geothermal) starting with three pilot projects.	• Reduce Greenhouse Gas Emissions • Decrease reliance on foreign sources • Improve local and regional economy • Improve forest health	Identify DCR high visitor profile facilities for conversion to onsite power generation	Oct., 2004	Chair: Jim DiMaio, Forestry Robin Pfetch- Engineering Jim Baecker- Planning
		Develop conversion plans	Dec., 2005	
		Seek implementation grants and partnerships	Feb., 2005	
		Develop interpretive material	May 2005	
		Implement and monitor	On-going	
Include energy efficient improvements in new skating rink lease agreements.	• Improved health benefits to rink staff and users • Reduced demand for electric power • Reduce greenhouse gas emissions • Reduce use of harmful chemicals • Cost savings	Work with DCAM to prepare draft RFP for six DCR Skating Rinks that includes energy improvement language	Sep., 2004	Chair: Todd Lafleur, State Parks
		Release and advertise RFP	Oct., 2004	
		Proposals due to DCAM and DCR	Nov., 2004	
		Work with DCAM, EOEA and DCR staff to select successful bidders	Dec., 2004	
		Transition from state to private operation	April, 2005	
Institutionalize key behavioral practices to reduce energy costs	• Reduce Greenhouse Gas Emissions • Decrease reliance on foreign sources • Improve local and regional economy	Commissioner sends out letter of top 10 things employees can do to reduce energy costs. Post tasks list at copy stations and water coolers.	Nov., 2004	Chair: Sam Overton
		Monitor compliance and give incentives to unit that reduces energy costs the most	Dec., 2005	

Water Conservation Goal	Benefits	Specific Tasks	Timeline	Responsible Staff
Eliminate unnecessary water use in DCR pools by identifying and correcting major water loss from our recreational pools	• Dramatically reduce water usage • Reduce water costs • Reduce depletion of water resources	Must make capital budget available for improvements – repairs	Aug., 2004	Chair: Sam Overton, Raul Silva- Engineering Mike Misslin- Engineering Regional Supervisors
		Identify water losses from DCR pools during summer 2004	Jun. – Sep. 2004	
		Conduct repair study, develop a scope of work to address these issues (Design)	Aug. – Oct. 2004	
		Issue construction contract to repair these issues	Aug. – Oct. 2004	
		Repair identified water usage issues	Oct. 04 – June 05	
Adopt water conservation measures for all DCR site and building construction .	• Reduce water usage • Reduce water costs • Reduce depletion of water resources	Issue policy directive that all building renovations and new construction include water conserving showers, toilets, sinks and other plumbing.	Nov., 2004	Chair: Mike Gildesgame, Water Resources Raul Silva- Engineering Regional Supervisors
		Issue policy directive that all site construction include water conserving lawn and landscape techniques and technologies, as per the Water Resources Commission guidance and policy.	March 2005	

Solid Waste Reduction/ Recycling Goal	Benefits	Specific Tasks	Timeline	Responsible Staff
Implement a system -wide program to reduce solid waste generation and increase recycling by staff (offices and maintenance facilities), and park visitors (bottles and cans).	• Reduce disposal costs • Create local jobs • Reduce extraction of natural resources • Save energy and water used in manufacturing • Reduce need for additional landfill space • Reduce emissions from incinerators and reduce run-off from landfills.	Join EPA Waste Wise Program	Oct., 2004	Chair: Todd Lafleur, State Parks Scott Murphy- Urban Parks Les Perry- State Parks Jim Baecker- Planning
		Develop agency waste reduction and recycle plan	Dec., 2004	
		Negotiate recycling contract with the Institutional Recycling Network.	Jan. 2005	
		Enlist a corporate sponsor	Jan., 2005	
		Obtain funding for recycling program	Jan., 2005	
		Establish policy and procedures to recycle DEP waste ban materials at DCR facilities	Feb., 2005	
		Create/buy visually consistent recycling containers	Feb., 2005	
		Publicize new program to staff and begin recycling program	Mar., 2005	
		Establish baselines for solid waste generation and recycling rates	Apr., 2005	
		Implement and monitor	On-going	
Ensure Utilization of most recent BMPs for Construction	• Reduce storm water run off • Reduce material waste and disposal	Incorporate storm water, material waste and disposal best management practices in construction contract boiler plate.	Jan., 2005	Chair: Paul DiPietro, Engineering Ruth Teixeira- Engineering Vinny Vignali.- Water Supply Marty Glavin- Urban Parks

Sustainable Design Goal	Benefits	Specific Tasks	Timeline	Responsible Staff
Integrate Sustainable Practices into Planning and Engineering Projects	• Slow global climate change • Improve air quality • Conserve energy • Reduction of Water and Sewer Charges • Increase in employee productivity	Incorporate sustainable design goals into the capital planning, budgeting and approval process.	Jan., 2005	Chair: Samantha Overton, Ruth Teixeira, Engineering
		Develop and issue Sustainable Design (LEED) Standards for new and major renovation building projects	March 2005	
		Develop and issue sustainable design standards for site improvement capital projects.	June 2005	
		Provide LEED training for key DCR building design and engineering staff	Dec., 2005	

Procurement and Specifications Goal	Benefits	Specific Tasks	Timeline	Responsible Staff
Increase % of EPPs	• Increase EPP awareness • Gain Knowledge • Increase EPP purchasing • Vendor Learning	Use DCR intranet and/or direct letter to employees to promote EPP Fair attendance	Sept., 2004	Chair: Dave O'Neill, State Parks Vin Micozzi- Procurement Mike Rock- Finance
		Add info to employee check stub promoting EPP Fair	Sept., 2004	
		Review purchasing history to identify areas for increased purchase of EPPs.	Nov., 2004	
		Create and issue policy of using EPP's	Nov., 2004	
		Add language in RFRs promoting EPPs	Nov., 2004	
		Work with DCR staff to promote increased purchase of EPPs.	June, 2005	

Hazardous Material Use Goal	Benefits	Specific Tasks	Timeline	Responsible Staff
Identify potential swimming pools for chemical free water treatment systems (ionization, sand filter or ozone)	• Reduce chemical usage • Reduce chemical expenditures	Investigate new technologies such as ionization, sand filers and others for pools	Dec., 2004	Chair: Scott Murphy- Urban Parks Ruth Teixeira, Engineering
		Develop FY '06 capital budget request	Feb., 2004	
		Solicit proposals from vendors on statewide contract	June, 2005	
		Install new systems	June, 2006	
Institute environmental management systems to maintain compliance and reduce the amount of hazardous waste entering the waste stream through recycling.	• Divert hazardous material from the waste stream • Improve staff safety • Ensure compliance	Expand annual hazardous waste training schedule to DCR operational staff statewide.	Oct., 2004	Chair: Scott Murphy- Urban Parks Les Perry- State Parks
		Provide hazardous and waste oil management training statewide.	April, 2004	
		Develop self-audit procedure for hazardous material generating facilities.	Jan., 2005	
		Issue policy on self-audits and purchase environmental compliance equipment.	March, 2005	

4.0 Making Sustainability a Part of What We Do

In order for sustainability practices to take hold at DCR, it is essential that employees be regularly presented with sustainability-related education and shown ways to integrate the issue into their work. The following sections identify ways in which DCR will address those challenges systematically.

4.1 Integrating Environmental Impacts into Key Decision Points

Because the DCR Leadership Team is a strong supporter of sustainable practices it is important for the organization to integrate environmental impacts into key decision making points. Below is a list of these points and suggestions for leveraging these decisions.

Key Decision Points at DCR	***Suggestions for Integrating Sustainability***
Project development for new construction and renovations	• Institute an agency policy that all projects will be developed with sustainable design at the outset of a project instead of it as an alternative option • Select architect, contractor, etc with sustainable design experience • Require LEED certification or equivalent for contractors and building professionals • Specify materials that meet EPP criteria • Adopt landscape sustainable design standards • Incorporate low impact development techniques to reduce storm water runoff and increase infiltration • Include maintenance and operations personnel in decisions for best life cycle value
Capital Planning and Budgeting	• Develop capital plans and budgets that prioritize projects by incorporating the life cycle cost and environmental impacts in the evaluation and approval process • Make budget requests for energy retrofits and other improvements that save operating costs • Include maintenance and operations personnel in decisions for best life cycle value
Operating Budget Planning	• Review budget to identify budget allocated to managing waste • Allocate resources for programs which promote sustainable practices and education
Procurement	• Include EPP standards into specifications, bids, RFPs • Train and encourage procurement staff of EPPs • Encourage facility and procurement staff to attend annual EPP Vendor Fair sponsored by OSD • Provide check-off on encumbrance document to confirm environmental options considered before key purchases approved • Designate EPP coordinator for agency
Resource Management planning	• Include sustainability measures in all stewardship plans developed for DCR operating units.
Regional and park level management	• Develop standard policies and procedures handbook that incorporates sustainable practices for park management including, but not limited to mosquito control, solid waste management, forestry, storage of hazardous materials, etc.
Leases, Concessions and Permits	• Include sustainability measures in all leases, concession agreements and permits for use and operation of DCR facilities by third parties.

4.2 Education and Training of Staff

Education and training is a key component to DCR's strategy for sustainable success. In order to reduce transportation, we will add the presentations to regional staff meetings and other staff informational sessions, and post it on the DCR's intranet site. By the end of 2004 the Sustainability Team will present the Sustainability Plan at all DCR bureau and regional staff meetings. In addition, we will encourage procurement and other key staff to attend the annual OSD Buy Recycled and EPPs Vendor Fair and Conference to educate people on the importance of EPPs and the availability of them on state contract. As described more fully in the Sustainability Team Work Plan, information about ways employees can reduce energy costs, reduce water consumption and increase recycling will be provided to staff. In addition, DCR staff will be encouraged to attend sustainable design and hazardous material management training programs.

4.3 Management Systems

As a new agency, DCR does not currently have a formal Environmental Management System in place. At the former DEM and MDC some practices and policies were put in place that need to be reviewed, evaluated and, if appropriate, put in place statewide. Once the DCR leadership team finalizes its agency reorganization plan, the sustainability team will work with the leadership to develop written sustainable policies and procedures to be approved by the Commissioner and communicated to staff. We will probably not be able to develop a comprehensive EMS immediately, but this will be a good step in that direction. Initial work will focus on the following suggestions for management systems that were presented in the Sustainability Implementation Guide:

- Integrate environmental responsibilities into job descriptions and performance reviews
- Incorporate environmental considerations into standard operating procedures
- Establish a written agency sustainability policy that sets a broad vision for the staff and includes specific operational guidelines for various agency operations.
- Provide the opportunity for employee feedback to review program efforts
- Include top-level management in the activity prioritization process
- Offer recognition / awards that highlight work and spread best management practices

5.0 Measuring Ourselves to Ensure Ongoing Performance

Once momentum is built, it is essential to keep it moving. That is where tracking, reporting and striving for continuous improvement ensure that we don't become complacent with early success. The sections below describe how DCR will continue its sustainable efforts over time.

5.1 Agency Tracking and Reporting Form

DCR's Sustainability Team will create an adhoc sub-committee focused on completion of the annual Agency Tracking and Reporting Form. It will meet annually at the beginning of September, after the fiscal year accounts payable period has ended to work with the finance staff and other staff responsible for collecting and tracking data to review from and make assignments and timelines for collecting the information. The team will meet again in the beginning of October to review progress. The information will be compiled by the sub-committee and reviewed by the agency Sustainability Coordinator and the Commissioner prior to submission to the State Sustainability Council in November.

5.2 Continuous Improvement

The state sustainability team will need to meet every 2 months for reports from sub - groups and committees on their short-term action plan tasks. A tracking device will be developed for the shared drive to tract sustainability program projects. This type of tracking device would enable each sub committee to update their progress and have it viewed by the larger group. In addition, the Sustainability Team will provide annual progress reports to the Commissioner outlining accomplishments over the past year and proposing a work plan for the following year.